







- C1088 Specification for Thin Veneer Brick Units Made From Clay or Shale
- C1167 Specification for Clay Roof Tiles
- C1180 Terminology of Mortar and Grout for Unit Masonry
- C1261 Specification for Firebox Brick for Residential Fireplaces
- C1262/C1262M Test Method for Evaluating the Freeze-Thaw Durability of Dry-Cast Segmental Retaining Wall Units and Related Concrete Units
- C1272 Specification for Heavy Vehicular Paving Brick
- C1319 Specification for Concrete Grid Paving Units
- C1372 Specification for Dry-Cast Segmental Retaining Wall Units
- C1386 Specification for Precast Autoclaved Aerated Concrete (AAC) Wall Construction Units (Withdrawn 2013)<sup>3</sup>
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- C1491 Specification for Concrete Roof Pavers (Withdrawn 2023)<sup>3</sup>
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- C1568 Test Method for Wind Resistance of Concrete and Clay Roof Tiles (Mechanical Uplift Resistance Method)
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- C1623 Specification for Manufactured Concrete Masonry Lintels
- C1634 Specification for Concrete Facing Brick and Other Concrete Masonry Facing Units
- C1691 Specification for Unreinforced Autoclaved Aerated Concrete (AAC) Masonry Units
- C1692 Practice for Construction and Testing of Autoclaved Aerated Concrete (AAC) Masonry
- C1693 Specification for Autoclaved Aerated Concrete (AAC)

### 3. Terminology

**3.1 Generic Definitions**—The definitions apply to manufactured masonry units and masonry constructed with manufactured masonry units. They are generic as used by ASTM Committees C12 and C15.

**bed surface, *n***—*before and during construction*, the nonvertical surfaces of a manufactured masonry unit intended by the manufacturer to be joined by mortar or other methods.

**bed surface, *n***—*in situ*, the nonvertical surfaces of a manufactured masonry unit joined by mortar or other methods.

**cryptofluorescence, *n***—crystalline deposit of water-soluble compounds in the pores of masonry.

**efflorescence, *n***—crystalline deposit, usually white, of water-soluble compounds on the surface of masonry.

**face, exposed, *n***—masonry unit surface(s) that is exposed to view when the unit is placed in usage.

**face, finished, *n***—any surface(s) of a manufactured masonry unit intended by the manufacturer to be exposed to view.

**freeze thaw resistance, *n***—the ability of masonry to maintain integrity under the forces caused by cyclic action of freezing and thawing in the presence of moisture.

**frog, *n***—an indentation in a bed surface of a masonry unit.

**DISCUSSION**—Indentations not exceeding 3/8 in. (9.5 mm) are termed a frog, sometimes called a panel or panel frog. Indentations exceeding 3/8 in. (9.5 mm) are termed a deep frog.

**groove, *n***—a channel formed on surfaces other than finished faces of manufactured masonry units for production or construction purposes.

**height, *n***—vertical dimension of the face of a unit when the unit is positioned as a stretcher.

**length, *n***—horizontal dimension of the face of a unit when the unit is positioned as a stretcher.

**masonry, *n***—the type of construction made up of manufactured masonry units laid with mortar, grout, or other methods of joining.

**nominal dimension, *n***—dimension that is greater than the specified dimension by the specified thickness of a mortar joint.

**DISCUSSION**—Nominal dimension is usually expressed as a whole number.

**permeable unit pavement system, *n***—pavement with wearing surface made from clay or concrete units that allows infiltration of water through open-graded aggregate in the joints, cores, or other openings, to a bed, base, and subbase, or combinations thereof.

**DISCUSSION**—Permeable pavement systems are utilized to reduce stormwater runoff. Permeable pavements have wearing surfaces with high initial water infiltration through open spaces filled with aggregates to drain water into open-graded bedding and base materials. The open spaces in the wearing surface are designed to enable sufficient infiltration rates to handle runoff from designated storm types (for example, 1 year, 24 hour event).

With unit pavers the open spaces can be achieved with exposed coring, a specially-shaped perimeter configuration, or wider joints, or combinations thereof. Permeable pavement systems can also be made with standard units and a laying pattern that permits sufficient water entry.

**score, *n***—a channel formed for appearance purposes on the finished faces of a manufactured masonry unit.

**shell, *n***—the outer walls of a hollow masonry unit.

**DISCUSSION**—Shell can either be an end shell or a face shell.

**specified dimensions, *n***—dimensions to which masonry units or constructions are required to conform. Actual (measured) dimensions may differ from the specified dimensions by permissible variations.

**surface feature, *n***—a quality or condition of the face of a manufactured masonry unit.

**DISCUSSION**—Surface features include coatings, colors, textures, relief, or combinations of these. A masonry unit may have different surface features on individual faces.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).



**DISCUSSION**—Ceramic materials used for brick and clay tile typically consist of clay or other similar earthy materials that have been fired in a kiln to temperatures above 1500°F (655°C). The exposure to high temperature begins the transformation of the constituent materials from their natural state to that of a glassy state (incipient fusion).

**clay, *n***—an earthy or stony mineral aggregate consisting essentially of hydrous silicates of alumina, plastic when sufficiently pulverized and wetted, rigid when dry, and vitreous when fired to a sufficiently high temperature.

**color, body, n**—the range of color obtained when materials used to form the brick react to the effects of firing temperature and atmosphere.

**DISCUSSION**—There may be additives in the body to produce a desired color. When no materials are added to the surface of the brick and the unit is not flashed when fired, the body color is also the through-body color, a surface feature.

**color, through-body, n**—the range of surface color obtained when units without materials added to the surfaces for appearance purposes are fired without flashing.

**Discussion**—Through-body color results from the materials used to form the brick reacting to the effects of firing temperature. There may be additives in the body to produce a desired color.

**coring**, *v*—the process of perforating structural clay products, generally performed during extrusion by supporting cores (rods) within the shaping cap of the extruder.

**engobe**, *n*—a slip, other than a glaze, that is not impervious and is applied as a coating to a ceramic body to function as a glaze undercoat or to impart color, texture, opacity, or other characteristics.

**extrusion, *n***—shaping of brick by pushing plastic clay or shale through a die opening that forms the peripheral dimensions of the brick.

**DISCUSSION**—The column of extrudate is then cut into sections to provide the third dimension of the brick. Water is added to the clay or shale in sufficient quantities to permit laminar flow through the extrusion machine. The consistency of the extrudate may vary from stiff and capable of supporting several times its weight to soft and deformable under slight loads.

**finish, coated, *n***—the surface color and texture resulting from the application of mineral particles to the finished faces in the manufacturing process.

**Discussion**—Coatings include engobes, glazes, sands, and slips, and these may contain clays, colorants, fluxes, sands, and other materials. Coatings may be applied wet or dry and alone or in combinations.

**finish, combed, *n***—the texture resulting when faces are altered by more or less parallel scratches or scarfs in manufacture.

**finish, flashed, n**—the range of color produced by the presence of a reduced oxygen atmosphere in the kiln during firing.

**finish, plaster-base, n**—the texture intended for the direct application of plaster.

**DISCUSSION**—Plaster-base finishes may be smooth, scored, combed, or roughened.

**finish, sand, *n***—the color and texture resulting when faces have sand applied either to the clay column in the extrusion process for appearance purposes or as the lubricant to the molds in the molding process.

**fire clay, *n***—a sedimentary clay of low flux content.

**fired bond, *n***—bond developed between particulate constituents of brick solely as the result of the firing process.

**DISCUSSION**—The bond may result from fusion or melting of one or more constituents of the composition or the surface of particles. Other thermal mechanisms such as sintering and interparticle reaction may be responsible for the bond.

The higher the heat treatment, the greater the extent of bonding and consequently the greater the developed strength and the lower the resulting porosity. The bond development should be sufficient to provide the specified strength, porosity, and durability for any particular product.

**firing,  $v$** —process of heating the material to elevated temperatures.

**DISCUSSION**—The temperatures are usually in excess of 1706°F (930°C). The extent of firing is a function of both time and temperature. The firing develops the inter-particulate bond, the strengths, the pore structure, and the color of the product. The extent of firing should be sufficient to produce the levels of these properties required by the specifications for the particular product.

**glaze, *n***—an impervious finish composed of ceramic materials, fused during firing with the body of brick or tile, which is a semivitreous or vitreous surface and may be clear, white, or colored.

**glaze, salt, n**—the color and texture resulting when faces have a lustrous glazed finish from the thermochemical reaction of the silicates of the clay body with vapors of salt or chemicals.

**impervious**, *adj*—describes the state of having obtained that degree of vitrification evidenced visually by resistance to penetration of a specified dye.

**incipient fusion,  $n$** —beginning of the development of fired bond.

**molding**, *v*—shaping of brick by dropping, throwing, or vibrating wet clay or shale in a mold cavity shaped to provide the peripheral dimensions of the brick.

DISCUSSION—Sufficient water is mixed with the clay or shale to produce a soft consistency.

When insides of molds are sanded to prevent sticking of clay, the product is sand-struck brick. When the molds are wetted to prevent sticking, the product is water-struck brick.

**pressing**, *v*—shaping of brick by pressing clay or shale into a mold cavity which forms the peripheral dimensions of the brick.

DISCUSSION—Different subclassifications of pressing are defined by the quantity of water mixed with the clay or shale.

*Dry pressing* uses high forming pressures and low water contents usually between 0 and 5 %.

*Plastic pressing* uses low pressures and sufficient water to produce a plastic mixture.

*Semi-dry pressing* uses intermediate pressures and water quantities nominally between 5 and 14 %.

**reactive particulates, *n***—a particle or particles present in a clay body, which when near the surface may flake off or cause an eruption (pop-outs) of the surface when exposed to the weather.

**shale, *n***—a thinly stratified, consolidated, sedimentary clay with well-marked cleavage parallel to the bedding.

**slip, n**—a suspension of clay and mineral particles in a water medium applied as a coating or finish to a ceramic body that, when fired, may function as a glaze or an engobe.



**struck surface, *n***—the surface of a molded brick that is not in contact with the mold and from which the excess clay/shale mixture is removed.

**surface clay, *n***—an unconsolidated, unstratified clay, occurring on the surface.

**tile, end-construction, *n***—tile designed to receive its compressive stress parallel to the axes of the cell.

**tile, fireproofing, *n***—tile for use as a protection for structural members against fire.

**tile, furring, *n***—tile for lining the inside of walls and carrying no superimposed loads.

**tile, header, *n***—tile designed to provide recesses for brick header units in masonry faced walls.

**tile, loadbearing, *n***—tile for use in masonry constructions designed to carry superimposed loads; see Specification C34.

**tile, nonloadbearing, *n***—tile for use in masonry constructions carrying no superimposed loads; see Specification C56.

**tile, partition, *n***—tile for use in building interior partitions, subdividing areas into rooms, or similar constructions, and carrying no superimposed loads.

**tile, side-construction, *n***—tile designed to receive its compressive stress at right angles to the axes of the cells.

**tile, structural clay, *n***—hollow burned-clay masonry building units with parallel cells or cores or both.

**tile, structural clay facing, *n***—tile designed for use in interior and exterior unplastered walls, partitions or columns; see Specification C212.

**webs, *n***—the partitions dividing tile or hollow brick into cells.

### 3.3 Definitions Specific to Concrete Masonry Units and Related Units:

**absorption, *n***—difference in the amount of water contained within a concrete masonry unit or related unit between a saturated and oven-dry condition in accordance with the requirements of Test Methods C140/C140M. It is expressed as weight of water per volume of concrete.

**brick, calcium-silicate, *n***—a pressed and subsequently autoclaved unit that consists of sand and lime, with or without the inclusion of other materials.

**brick, concrete, *n***—a concrete masonry unit made from portland cement, water, and suitable aggregates, with or without the inclusion of other materials. See Specification C55.

**brick, concrete building, *n***—a concrete masonry unit, with a maximum width of 4 in. (100 mm) and of a weight that will typically permit the unit to be lifted and placed with one hand, which is manufactured for general use in non-facing, utilitarian applications.

**DISCUSSION**—Requirements for concrete building bricks are found in Specifications C55. Test methods for concrete building bricks are found in Test Methods C140/C140M.

**brick, concrete facing, *n***—a concrete masonry unit, with a maximum width of 4 in. (100 mm) and of a weight that will typically permit the unit to be lifted and placed with one hand, which is manufactured to be typically used in an application where one or more faces of the unit are intended to be exposed.

**DISCUSSION**—Requirements for concrete facing bricks are found in Specifications C1634. Test methods for concrete facing bricks are found in Test Methods C140/C140M.

**brick, sand-lime, *n***—See calcium-silicate brick.

**concrete floor tile (CFT), *n***—a manufactured masonry unit that is a blend of cementitious material, aggregates, pigments, chemical admixtures, and water formed into the appropriate shape and cured in order to be applied by means of masonry mortar to an approved substrate.

**coupon, *n***—a solid specimen, rectangular in any cross-section, that is saw-cut from a concrete masonry unit or related unit for the purpose of testing, and whose properties are considered representative of the whole unit.

**dry-cast, *adj***—manufacturing concrete products using low frequency, high amplitude vibration to consolidate concrete of stiff or extremely dry consistency in a form.

**drying shrinkage, *n***—in this test method, the change in linear dimension of the test specimen due to drying from a saturated condition to an equilibrium weight and length under specified accelerated drying conditions. C426

**lot, *n***—any number of concrete masonry units or related units designated by the producer of any configuration or dimension manufactured by the producer using the same materials, concrete mix design, manufacturing process, and curing method.

**moisture content, *n***—amount of water contained within a concrete masonry unit or related unit at a given time expressed as a percentage of the total amount of water in the unit under saturated conditions.

**DISCUSSION**—Moisture content is calculated as the difference in the received weight of the unit and the dry weight of the unit divided by the difference in the saturated weight of the unit and the dry weight of the unit, multiplied by 100 %.

**unit, concrete masonry, *n***—manufactured masonry unit made of concrete in which the binder is a combination of water and cementitious materials.

**DISCUSSION**—Typical concrete masonry units are manufactured using a dry-cast process.

**unit, lightweight concrete masonry, *n***—unit whose oven-dry density is less than 105 lb/ft<sup>3</sup> (1680 kg/m<sup>3</sup>).

**unit, medium weight concrete masonry, *n***—unit whose oven-dry density is at least 105 lb/ft<sup>3</sup> (1680 kg/m<sup>3</sup>) and less than 125 lb/ft<sup>3</sup> (2000 kg/m<sup>3</sup>).

**unit, normal weight concrete masonry, *n***—unit whose oven-dry density is 125 lb/ft<sup>3</sup> (2000 kg/m<sup>3</sup>) or greater.

### 3.4 Definitions Specific to Autoclaved Aerated Concrete Masonry Units:

**autoclaved aerated concrete (AAC), *n***—a cementitious product based on calcium silicate hydrates in which low density is attained by the inclusion of an agent resulting in macroscopic voids, and in which curing is carried out using high pressure steam. Material specifications for this product are prescribed in Specification C1693.

**AAC masonry, thick-bed, *n***—AAC masonry whose mortar joints are approximately 3/8 in. (10 mm) thick.

**AAC masonry, thin-bed, *n***—AAC masonry whose mortar joints are approximately 1/16 in. (1.5 mm) thick.

### 3.5 Definitions Specific to Clay and Concrete Roof Tile Units:

### 3.5.1 Definitions Specific to Clay Roof Tile Units

**clay roof tile, *n***—a solid unit of clay or shale, or both, formed into any of a range of generally rectangular planar shapes while plastic and fired in kiln; see Specification C1167.

**Discussion**—Clay roof tile is a ceramic product.

**clay roof tile, high profile, *n***—tile having a rise to width ratio greater than 1:4.

**clay roof tile, hip and ridge, *n***—tile designed for application to the hip or ridge of a roof.

**clay roof tile, interlocking, *n***—tile with a system of ribs or grooves enabling the lateral joining of adjacent tiles in the same course with the overlapping edge of one tile covering the underlapping edge of another forming the side lap.

**Discussion**—In some tile designs, provision is also made for interlocking in the overlapping area of the head lap.

**clay roof tile, low profile, *n***—tile having a rise to width ratio equal to, or less than 1:4.

**clay roof tile, non-interlocking, *n***—tile without restrictive ribs, grooves, or channels at the side lap or head lap.

**lap, head, *n***—(1) the distance between the lower (nose) edge of an overlapping tile and the upper edge of the lapped unit in the course immediately below; (2) *for shingle tile only*—the distance between the lower (nose) edge of an overlapping shingle tile and the upper edge of the lapped unit in the second course below.

**Discussion**—The head lap and side lap specified with a particular tile form the basis for determining area coverage of the specific design and the computation of the number of units required to cover a given area of roof. Tile is specified and sold on the basis of number of units required to cover one roofing square, that is, 100 ft<sup>2</sup> (9.29 m<sup>2</sup>) of roof.

**lap, side,  $\pi$** —the distance by which the side edge of one tile overlaps the side edge of an adjacent tile in the same course; for interlocking tile this corresponds to the width of that part

of the tile that contains the ribs, grooves, or channels which provide for interlocking. (See Discussion under **head lap**.)

**length,  $n$** —the maximum dimension of the tile measured parallel to the water channels or perpendicular to the eave of the roof.

**lugs, batten, *n***—protrusions on the underside of tile designed to engage over the upper edge of tiling battens.

**lugs, nose, n**—projections on the underside of the nose of each tile contoured to fit into the main water courses of the tile immediately below, inhibiting the entry of wind-driven rain.

**nail hole**, *n*—an appropriately sized opening such that tile shall not be fractured by the fastener and fixing process used to attach the tile to the roof deck.

nose,  $n$ —the lower visible edge of tile as applied on the roof.

**profile,  $n$** —the contour of the top surface of the tile when viewed from the nose end.

**rise,  $n$** —the maximum dimension of the cross-sectional profile of the tile measured perpendicular to the roof surface as installed.

**thickness,  $n$** —a measurement of the cross section of the tile made perpendicular to its surface.

**width,  $n$** —the maximum dimension of the tile measured perpendicular to the length.

### 3.5.2 Definitions Specific to Concrete Roof Tile Units

**lap, head,  $n$** —distance of overlap measured from the uppermost course to the point that it laps over the undermost course.

**lap side,  $n$** —continuous longitudinal overlap of a tile on its neighbor.

**length,  $n$** —maximum overall dimension of the tile measured parallel to the water course.

**lugs, batten, *n***—protrusions on the underside of the tile designed to engage over the upper edge of tiling battens.

**lugs, nose, *n***—protrusion on the underside of the nose of each tile, contoured to fit into the main water courses of the tile immediately below, inhibiting the entry of wind-driven rain.

**nail hole, *n***—small opening passing partially or totally through the tile to allow the penetration of a nail or screw for the purpose of fastening the tile to a support.

**profile,  $n$** —contour of the top surface of the tile when viewed from the nose end.

**rise,  $n$** —vertical distance from the underside of the batten lug to the highest point of the surface profile.

**tile, high profile, *n***—tile with a rise to width ratio greater than 1:5.





**tile, interlocking, *n***—tiles with a system of ribs or grooves enabling the lateral joining of adjacent tiles in the same horizontal row, with the overlapping lock covering the underlapping lock.

**tile, low profile, *n***—tile with a rise equal to or less than ½ in.

**tile, medium profile, *n***—tile with a rise greater than ½ in. and a rise-to-width ratio of less than or equal to 1:5.

**tile, non-interlocking, *n***—tiles that butt at the sides without lapping adjacent tiles.

**thickness, *n***—any vertical measurement of the cross section of the tiles excluding the lapping area, nose lugs, and weather checks.

**weather checks, *n***—protrusions below the tile designed to restrict the flow of water between two consecutive courses of tiles.

**width, *n***—maximum overall dimension of the tile measured perpendicular to the length or water channel.

**water course, *n***—valley portion of a profiled tile along which water drains.

### 3.6 Definitions Specific to Fly Ash Masonry Units:

**brick fly ash, *n***—a masonry unit made from fly ash, water, and suitable aggregates with or without the inclusion of other materials and specifically without the inclusion of portland cement.

## SUMMARY OF CHANGES

Committee C15 has identified the location of selected changes to this standard since the last issue (C1232 – 21a) that may impact the use of this standard. (December 15, 2023)

(1) Added definition and discussion for unit, segmental retaining wall.

(2) Added definition and discussion for “brick, concrete building” and “brick, concrete facing.”

(3) Changed definitions for “face, exposed” and “unit, facing.”

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